MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

OPERATIONAL MEMO 115-14
Revision 7

TO: All Waste and Hazardous Materials Division Supervisors

FROM: George W. Bruchmann, Chief, Waste and Hazardous Materials Division

DATE: February 23, 2007

SUBJECT: Laboratory Detection Limits for use with Part 115, Solid Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA)

The attached tables list Reporting Limits (RLs) that are applicable to groundwater, secondary collection system (SCS), and leachate monitoring performed pursuant to licenses and/or permits issued under Part 115. These RLs would be considered "acceptable detection limits" under Rule 905(2)(c)(iii) and Rule 907(4) of the Part 115 Rules for groundwater, SCS, and leachate analysis. The limits in this memo are to be used for a detection and compliance monitoring program to verify that no contamination has occurred because of Part 115 activities.

"Reporting Limit" is a term used by the Department of Environmental Quality (DEQ) Environmental Laboratory. The RLs are not method detection limits (MDLs). The MDLs are the lowest concentration of an analyte that can be detected with 99 percent confidence that the analyte is actually present (based on a one-tailed Student's t distribution). The RLs are derived from MDLs. The RL is equal to or greater than the MDL. The RL reflects the DEQ Environmental Laboratory's ability to achieve this level of detection on actual environmental samples in most instances. For ease of reporting, some RLs are rounded up to achieve consistency within an analyte group. The RL list provides general detection limits that serve as performance standards for evaluating a laboratory's capabilities. The Waste and Hazardous Materials Division (WHMD) requires the MDLs for detection monitoring programs to be equivalent to, or lower than, the RLs established by the DEQ Environmental Laboratory for the following reasons:

1. The WHMD considers the RLs established by the DEQ Environmental Laboratory to be a reasonable performance standard for laboratories that do testing for environmental detection monitoring programs.

2. Low detection limits are necessary to detect and react to a release to the environment at the earliest possible opportunity.

3. The DEQ Environmental Laboratory will be used to analyze samples that are collected by WHMD staff to evaluate the performance of environmental detection monitoring programs. Any resulting regulatory action would be based on the DEQ analytical data above the RLs.

The WHMD, in consultation with the DEQ Environmental Laboratory, may accept detection limits other than those published by the DEQ depending on site conditions and sample/laboratory limitations. Exceptions may be made for specific analytes for which there is a matrix interference. In addition, exceptions may be made for analytes that occur naturally in

groundwater at high levels. For example, if the background concentration of chloride in groundwater is 100 parts per million (ppm), then it may not be necessary to require that the facility meet a one ppm detection limit.

A facility requesting an alternate detection level may be asked to provide documentation to the WHMD to support their request. The documentation should include, but not be limited to, method procedures, use of a field blank, all raw data, quality assurance, and quality control data (instrument calibration, precision and accuracy, surrogates, and internal standards). A written description of attempts to achieve the RL should be provided, along with observations and rationale as to why the RL cannot be met.

Please note that some of the RLs listed on the attached tables are lower than the detection limits listed in the Michigan Environmental Response Act (MERA) Operational Memos Number 6 and Number 18 as revised, published by the Remediation and Redevelopment Division. The detection limits contained in these memos are an interpretation of Part 201, Environmental Remediation, of the NREPA, and have been developed to ensure that a "cleanup" to risk-based levels of contamination has been achieved during remediation activities. As noted in the MERA documents, some of the "remediation" detection limits are too high to be applicable to environmental detection monitoring programs.

Detection limits may be lower than those listed.

The method(s) listed are used by the DEQ Environmental Laboratory to achieve the listed RL. Alternate methods that can achieve the required RLs can be used with prior DEQ approval.

This Operational Memo will be updated as needed by the Storage Tank and Solid Waste Section to reflect any changes in required RLs. These updates should coincide with the updates of WHMD's Operational Memo Gen-8, Laboratory Detection Limits for Environmental Monitoring Programs, as this Operational Memo is a "subset" of Operational Memo Gen-8.

Attachment

REPORTING LIMITS
OPERATIONAL MEMO 115-14, Revision 7
Attachment
PRIMARY INORGANIC INDICATORS
(R 299.4450 of Part 115 Rules)

PARAMETER	*SUGGESTED METHOD	REPORTING LIMIT (µg/l)
CHLORIDES	325	1,000
IRON	6010B	20
SULFATES	375.2	2,000
TOTAL INORGANIC NITROGEN	353.2	20
TOTAL DISSOLVED SOLIDS	160.1	20,000

ALTERNATE INORGANIC INDICATORS
(R 299.4451 of Part 115 Rules)

PARAMETER	*SUGGESTED METHOD	REPORTING LIMIT (µg/l)
MAGNESIUM	7450	1,000
MANGANESE	6020	5
POTASSIUM	7610	100
SODIUM	7770	1,000
BICARBONATE ALKALINITY	. . . . .	10,000
CARBONATE ALKALINITY	. . . . .	10,000
CONDUCTIVITY	120.1	
PHENOLICS	9066	10
CYANIDE	9010	5
TOTAL ORGANIC CARBON	415.2	500
CHEMICAL OXYGEN DEMAND	410.4	5,000
BORON	6010B	20

*EPA Methods
1) Methods for Chemical Analysis of Water and Waste 1983
2) SW – 846

METALS
(R 299.4452 of Part 115 Rules)

PARAMETER	METHOD	REPORTING LIMIT (µg/l)
ANTIMONY	6020	1
ARSENIC	6020	1
BARIUM	6020	5
BERYLLIUM	6020	1
CADMIUM	6020	0.2
	*6010B	*5
CHROMIUM	6020	1
	*6010B	*20
COBALT	6020	15
COPPER	6020	1
	*6010B	*10
LEAD	6020	1
	*6010B	*50
NICKEL	6020	2
SELENIUM	6020	1
SILVER	6020	0.2
THALLIUM	6020	2
VANADIUM	6020	2
ZINC	6020	10

* Detection limit and method for routine leachate analysis.
These limits may <u>not</u> be acceptable when trying to obtain a waiver from groundwater monitoring.

PRIMARY VOLATILE ORGANIC CONSTITUENTS
(R 299.4453 of Part 115 Rules)

Suggested method: SW 846 Method 8260

PARAMETER	REPORTING LIMIT (µg/l)
BROMODICHLOROMETHANE	1.0
BROMOFORM, TRIBROMOMETHANE	1.0
CARBON TETRACHLORIDE	1.0
CHLOROBENZENE	1.0
CHLOROETHANE, ETHYL CHLORIDE	5.0
CHLOROFORM, TRICHLOROMETHANE	1.0
DIBROMOCHLOROMETHANE, CHLORODIBROMOMETHANE	1.0
O-DICHLOROBENZENE, 1,2-DICHLOROBENZENE	1.0
P-DICHLOROBENZENE, 1,4-DICHLOROBENZENE	1.0
1,1-DICHLOROETHANE, ETHYLIDENE CHLORIDE	1.0
1,2-DICHLOROETHANE, ETHYLENE DICHLORIDE	1.0
1,1-DICHLOROETHYLENE, 1,1-DICHLOROETHENE	1.0
CIS-1,2-DICHLOROETHYLENE, CIS-1,2-DICHLOROETHENE	1.0
TRANS-1,2-DICHLOROETHYLENE, TRANS-1,2-DICHLOROETHENE	1.0
1,2-DICHLOROPROPANE, PROPYLENE DICHLORIDE	1.0
CIS-1,3-DICHLOROPROPENE	1.0
TRANS-1,3-DICHLOROPROPENE	1.0
METHYL BROMIDE, BROMOMETHANE	5.0
METHYL CHLORIDE, CHLOROMETHANE	5.0
METHYLENE BROMIDE, DIBROMOMETHANE	1.0
METHYLENE CHLORIDE, DICHLOROMETHANE	5.0
METHYL IODIDE, IODOMETHANE	1.0
1,1,1,2-TETRACHLOROETHANE	1.0
1,1,2,2-TETRACHLOROETHANE	1.0
TETRACHLOROETHYLENE, TETRACHLOROETHENE, PERCHLOROETHYLENE	1.0
1,1,1-TRICHLOROETHANE, METHYL CHLOROFORM	1.0
1,1,2-TRICHLOROETHANE	1.0
TRICHLOROETHYLENE, TRICHLOROETHENE	1.0
TRICHLOROFLUOROMETHANE	1.0
1,2,3-TRICHLOROPROPANE	1.0
VINYL CHLORIDE	1.0
BENZENE	1.0
ETHYL BENZENE	1.0
STYRENE	1.0
TOLUENE	1.0
XYLENES	2.0

SECONDARY ORGANIC CONSTITUENTS
(R 299.4454 of Part 115 Rules)

Suggested method: SW 846 Method 8260

PARAMETER	REPORTING LIMIT (µg/l)
ACETONE	20.0
ACRYLONITRILE	5.0
BROMOCHLOROMETHANE	1.0
CARBON DISULFIDE	1.0
1,2-DIBROMO-3-CHLOROPROPANE, DBCP	5.0
1,2-DIBROMOETHANE, ETHYLENE DIBROMIDE, EDB	1.0
METHYL ETHYL KETONE, 2-BUTANONE	5.0
4-METHYL-2-PENTANONE, METHYL ISOBUTYL KETONE	5.0
TRANS-1,4,-DICHLORO-2-BUTENE	5.0
2-HEXANONE, METHYL BUTYL KETONE	5.0

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